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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/028,922	12/19/2001	Daniel J. Hoffman	004097 USA P 02/ETCH/DICP	2862
32588	7590	07/13/2005	EXAMINER PASCHALL, MARK H	
APPLIED MATERIALS, INC. 2881 SCOTT BLVD. M/S 2061 SANTA CLARA, CA 95050			ART UNIT 3742	
DATE MAILED: 07/13/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

*Pat*

<b>Office Action Summary</b>	Application No. 10/028,922	Applicant(s) HOFFMAN ET AL	
	Examiner Mark H. Paschall	Art Unit 3742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 April 2005.
- 2a) ☐ This action is FINAL.
- 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 125 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 24-100, 102 and 104-125 is/are allowed.
- 6) ☒ Claim(s) 1, 2, 10, 11, 15, 18-23, 101, 103 and 116 is/are rejected.
- 7) ☒ Claim(s) 3-9, 12-14, 16 and 17 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1,2,10,11,15,18,19,20,101,116 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maduda et al, 6,245,190' in view of Kaji et al, 5,432,315. Masuda et al teach the claimed subject including control of the plasma ion density and overhead electrode forming resonance with the plasma, but does not show an insulator covering or layer on the overhead electrode. See column 5 lines 47 to column 6 line 10. The patent to Kaji et al is applied for showing that it is beneficial to the processing and leads to less work contamination to have an insulator coating on the chamber electrode parts exposed to the plasma. In view of this teaching it would have been obvious to

Art Unit: 3742

modify the Masuda et al system with an insulative coating on the electrode portions exposed to the plasma, including the overhead electrode. This modification would have enhanced the process by leading to less contamination of the work. See column 2 lines 21-22 in Kaji et al. As per claims 23 and 116, the capacitive insulating layer between the electrodes can merely comprise the gap between the two when filled with gas during processing. Note that the gas baffles in the Masuda et al system as per claim 11. Use of particular frequencies such as set forth in claim 18 is a matter of choice for one of ordinary skill in the art, based on the end use of the device. Note the hollow conductor fed via gas 25 in Masuda et al as per claim 101.

Claims 21-23, 103 are rejected under 35 U.S.C. 103(a) as being unpatentable over Masuda et al in view of Kaji et al for the reasons set forth in the preceding paragraph, further in view of Shamouilian et al --6,095,084--. Masuda et al as modified teach the claimed subject matter except for showing use of a fixed impedance in the matching network. Shamouilian et al are applied for teaching that use of a fixed impedance element in the matching system is beneficial to the resonance of the system, and in view of this teaching it would have been obvious to further modify the Masuda et al system with the same, to effect a more resonant, and hence efficient plasma processing.

Claims 3-9, 12-14, 16, 17 contain allowable subject matter for setting forth use of a metal foam layer over the electrode structure.

Claims 24-100,102,104-125 contain allowable subject matter for showing use of a strip line conductor in the matching system and for showing use of specific multiple gas injection means into the showerhead system.

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-125 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark H. Paschall whose telephone number is 703 308-1642. The examiner can normally be reached on 7am - 3pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robin Evans can be reached on (703) 305-5766. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mark H Paschall

Application/Control Number: 10/028,922

Page 5

Art Unit: 3742

Primary Examiner  
Art Unit 3742

A handwritten signature in black ink, appearing to read "M. H. Padu", is written below the printed name of the Primary Examiner.

Mp